

IDENTIFICATION OF HISTORICAL POPULATIONS OF COHO SALMON (*Oncorhynchus kisutch*) IN THE OREGON COAST EVOLUTIONARILY SIGNIFICANT UNIT

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EXECUTIVE SUMMARY

In 2003, the Oregon Workgroup (Workgroup) of the Oregon Northern California Coast Technical Recovery Team (TRT) convened to review and analyze information that could shed light on historical populations of Oregon Coast coho salmon (*Onchorhynchus kisutch*). This document presents the preliminary conclusions of the Workgroup. A historical perspective describing how these populations functioned is an important first step in assessing viability of present-day populations and in developing de-listing criteria as an overall recovery strategy.

Documentation of life history traits, distribution, or abundance of Oregon Coast coho salmon prior to 1940 is limited. Considerable biological information has been gathered during the past thirty years, and particularly the past twelve years; however, it is difficult to relate the biological characteristics of modern populations to those that existed historically in the same basin. Human activities over the past 200 years have altered every aspect of salmon habitat on the coast, harvest has changed abundance patterns, and hatcheries may have blurred the distinctions among stocks. Coho salmon have adapted their behavior to many of these changes and, as a result, present-day Oregon Coast coho salmon populations function differently than they did historically. Nonetheless, we have tried to address where populations were historically and how these historical populations functioned.

To establish historical population boundaries, we relied on geographical and ecological characteristics of the landscape that have not been greatly altered by human activities. Geographical information was used in calculating the distance between ocean-entry points. Ecological characteristics were utilized in partitioning the Umpqua Basin into two historical populations. A total of 67 historical populations were identified through this analysis.

Our view of the historical population structure of Oregon Coast coho salmon relies on a simple conceptual model of the spatial relationships of 67 populations. We used a rule-based approach to identify populations. Subsequently, we utilized a Relative Independence Model to classify these populations on the basis of two key characteristics: persistence (their relative abilities to persist without input from neighboring populations), and isolation (the relative degree to which they might have been influenced by adult fish from other populations migrating into their spawning areas). The interaction of these two factors across what we believe to have been the historical populations of Oregon Coast coho salmon gives us a measure of Relative Independence. This Relative Independence gives us a basis for classifying the populations as Functionally Independent, Potentially Independent, and Dependent. Nine populations were identified as Functionally Independent, 9 as Potentially Independent, and 48 historical populations were identified as Dependent populations. We will use this classification in the next step—analyzing the viability of populations and ultimately of the ESU in order to identify quantitative goals for recovery. Two other recovery groups (the SONCC Workgroup and the Central California Coast TRT) are also using the Relative Independence Model to classify their populations.

These proposed historical populations are intended to be representative of the range and diversity of populations of Oregon Coast coho salmon, not necessarily an exact reconstruction. In this representation of historical populations, we assume that ocean feeding areas were a shared

resource and that, in the Umpqua Basin, populations probably shared juvenile rearing and migration corridors. Understanding the historical structure of populations in addition to their abundance and life-history characteristics provides a framework for comparing the historical to the present status of populations, the changes that have affected them, and the restoration of processes that may be necessary to recover them.

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